

XV. ELEVATORS

SURVEY SUMMARY

The elevator equipment is in acceptable condition considering its age and the quality of maintenance being performed. A life span of 40 to 50 years is considered acceptable for this type of elevator but in our opinion, these elevators will only function properly for another 10 years. This is contingent upon whether the existing elevator maintenance contract is continued and improved to an appropriate level.

Our life cycle analysis of the existing apparatus found the present control system components have not exceeded their designed net useful life.

The elevators presently do not meet the latest codes in the three areas listed below. Although “grandfathered,” these deficiencies should be corrected due to the associated safety liability issues.

- * Firefighters’ use
- * Communications
- * Emergency lighting in cars

The maintenance program now in effect provides adequate service. The number of deficiencies and call backs noted indicate the contractor is performing up to recommended standards. However, the maintainer of the equipment is not required to bring the system up to the standards established in this report due to the limitations of the maintenance contract in effect.

The existing equipment was upgraded about 1990 and should provide satisfactory service for the foreseeable future, providing the required preventive maintenance continues. Major upgrading of this system is not mandated or recommended at this time. However, long term planning requires some degree of modernization/upgrading be formulated and implemented in the near future, to assure continued reliability and satisfactory performance. Major component replacements and/or systems upgradings are warranted in the following equipment areas:

- * Elevator Cabs
- * Elevator Landing Doors

To modernize the cabs and landing entrances, it will take an estimated 30 weeks to complete the project after award of the contract.

Life Cycle Analysis					
Elevator I.D.: South Elevator					
Component/System	Projected Design Life (Years)	Present Age (Years)	Remaining Useful Life (Years)	Condition Comments	Recommended Action
MACHINE ROOM					
1. Hoisting Machinery, Sheaves & Bearing	50	70	?	OK	Recommend Overhaul
2. Drive Motor(s)	50	70	?	OK	Recommend Overhaul
3. Motor Generator(s) or Power Drives	40	10	30	OK	None
4. Signal Controls (Selectors)	40	10	30	OK	None
5. Motion Controls	40	10	30	OK	None
HOISTWAY AND PIT					
1. Wire Ropes (Hoist, Comp. & Governor)	10	5	5	OK	None
2. Guide Rails	50	70	?	OK	Recommend Alignment
3. Mechanical Safety Equipment & Counterweight	50	70	?	OK	Recommend Overhaul
4. Hoistway Door Equipment	30	10	20	OK	None
CAR EQUIPMENT					
1. Car Door Equipment	30	10	20	OK	None
2. Cab Enclosure	20	10	10	OK	Recommend Up Grade
3. Car Frame	50	70	?	OK	None
4. Car Safety	50	20	30	OK	Recommend Overhaul
OPERATING/SIGNAL EQUIPMENT					
1. Fixtures	20	10	10	OK	None

Life Cycle Analysis					
Elevator I.D.: North Elevator					
Component/System	Projected Design Life (Years)	Present Age (Years)	Remaining Useful Life (Years)	Condition Comments	Recommended Action
MACHINE ROOM					
1. Hoisting Machinery, Sheaves & Bearing	50	20	30	OK	None
2. Drive Motor(s)	50	20	30-	OK	None
3. Motor Generator(s) or Power Drives	40	10	30	OK	None
4. Signal Controls (Selectors)	40	10	30	OK	None
5. Motion Controls	40	10	30	OK	None
HOISTWAY AND PIT					
1. Wire Ropes (Hoist, Comp. & Governor)	10	5	5	OK	None
2. Guide Rails	50	20	30	OK	None
3. Mechanical Safety Equipment & Counterweight	50	20	30	OK	None
4. Hoistway Door Equipment	30	10	20	OK	None
CAR EQUIPMENT					
1. Car Door Equipment	30	10	20	OK	None
2. Cab Enclosure	20	10	10	OK	Recommend Up Grade
3. Car Frame	50	20	30	OK	None
4. Car Safety	50	20	30	OK	None
OPERATING/SIGNAL EQUIPMENT					
1. Fixtures	20	10	10	OK	None

EQUIPMENT EVALUATION

The present elevator control components were manufactured and installed by Montgomery Elevator Company, approximately 10 years ago. The original North Elevator was installed by Otis approximately 70 years ago. The original South Elevator was installed by Dover approximately 30 years ago.

The basic equipment is grouped and evaluated as follows:

A. Machine Room:

1. Hoisting Machinery, Sheaves & Bearings: The South Elevator equipment should be monitored carefully and overhauled as necessary.
2. Drive Motor: The South Elevator drive motor should be monitored carefully and overhauled as necessary.
3. Motor Generator(s) or Power Drives: The elevators have Silicon Controlled Rectifiers [SCR's] for power drives, both of which are in fine shape.
4. Signal Controls: Signal controls are closed loop systems and in good shape.
5. Motion Controls: Motion controls for both elevators are microprocessor based and in good shape.

B. Hoistway and Pit:

1. Wire Ropes (Hoist, Comp. & Governor): The hoist and governor ropes of both elevators seem to be satisfactory. Their replacement is covered under the maintenance agreement.
2. Guide Rails: The guide rails of the South Elevator should be re-aligned.
3. Mechanical Safety Equipment & Counterweight: The buffers and counterweights of both elevators are satisfactory.
4. Hoistway Door Equipment: The hoistway door equipment of both elevators is satisfactory.

C. Car Equipment:

1. Car Door Equipment: The car door operators of both elevators are in satisfactory shape.
2. Cab Enclosure: The cab enclosure of the South Elevator has been abused and should be modernized.
3. Car Frame: The car frame of both elevators is in satisfactory shape.
4. Car Safety: The car safety of the South Elevator should be over hauled.

D. Operating/Signal Equipment:

1. Fixtures: The car and hall operating fixtures of both elevators are satisfactory.

The elevators have both been upgraded several times during their life cycle. The present components are a mixture of old (machine, motor, car, counterweight, pit equipment) and new (controller, SCR's, fixtures and door operating components). The systems do not meet the latest code regulations in the following areas:

- Communications - Automatic dialing telephone or intercom system
- Emergency Lighting - In enclosure
- Fireman's recall - Phase I & II with recommended smoke sensors

Note: It is not required to meet these latest code regulations until a major modernization takes place, although the fireman's recall should be upgraded.

THE AMERICANS WITH DISABILITIES ACT (ADA)

The “ADA” is a Civil Rights act passed by the United States Congress and is enforced by the Department of Justice. It prohibits discrimination against the disabled in employment, state and local government services, public transportation, public accommodations and telecommunications.

ADA is a federal “compliance” law whereby an individual may file a lawsuit if he/she believes grounds for discrimination exist or are about to occur as a result of a lack of action. The ADA is not a local or state building code. Enforcement is currently triggered by inspection following a civil action filed by an offended party rather than a local or sub-code official’s inspection of conditions in a building.

The intent of this survey/evaluation is to provide technical assistance in the area of vertical transportation systems requirements for existing, altered and new buildings subject to the guideline applicability (ADAAG).

The ADA and its implementing regulations place numerous obligations on property owners, employers, local and state governments, retail establishments, places of public accommodation and commercial facilities. Determining the scope of these obligations is a legal judgement that must be made by individuals responsible in consultation with their qualified legal advisers. Our audit is limited to observed conditions, operations and signaling as compared to the ADAAG Part 4 published standards.

The following survey information and associated data should not be construed as a recommendation of Van Deusen & Associates or any of its employees. The decision to implement all, some or none of the technical changes applicable remains with our clients and/or the responsible entities they represent. The purpose of the audit is to provide a yardstick for others to measure the impact that compliance may have on existing systems.

The Americans with Disabilities Act Elevator Systems ADA Compliance Survey

Elevator (S) I.D. North and South

“S” denotes Satisfactory

“U” denotes Unsatisfactory

COMPLIANCE ITEM/CATEGORY	S	U	CONDITION COMMENTS
ASME A17.1 Safety Code	S		
Cab Enclosure (layout, door size, illumination and flooring)	S		
Car Operating Panel(s) (design, location and function)	S		
Car Signals and Communications (indicators and communications)		U	Install hands free emergency phones.
Car and Corridor Entrances (size, signage and Re-opening device)	S		
Corridor Fixtures (operation, signals and location)	S		
Operational Functions (automatic leveling and door timing)	S		
Additional Notes and Evaluation Clarifications			

1. MAINTENANCE AND PERFORMANCE EVALUATION

The present level of preventive maintenance (P.M.) servicing could be improved, especially in the area of door devices, ride quality and car top/pit housekeeping. General motor room devices have indications of P.M. servicing; however, the hoist motor commutators require service.

Age and original system design are factors to consider when evaluating the maintenance and systems performance. Conditions such as slow operating speeds, leaking bearings and controller relay conditions are age related rather than associated with poor maintenance practices. Many of the noted conditions are normally corrected under the contractor's scheduled maintenance programs when, in their opinion, conditions warrant.

Litter in the pit and dirty car tops will require more frequent cleaning. Amount of litter is beyond contractor's control.

Various individual performance levels are below our acceptable standards, as indicated in the Recorded Operating Data provided. Adjustments are required to return performance levels to acceptable standards.

The building is responsible for addressing certain Maintenance Deficiencies included in our report, which are beyond the scope of work of the elevator contractor. Items such as outdated fire extinguishers, poor machine room lighting/ventilation, missing machine room door labels, the machine room door closing and latching function and inoperable pit lighting are normally the responsibility of the building.

Most of the maintenance deficiencies noted are normally covered under the terms of standard full coverage maintenance agreements. Corrective action for the covered items should be performed in a timely manner by the current service company without additional charges. One to two months are sufficient for the contractor to address these conditions.

2. ITEMIZED DEFICIENCIES

North Elevator:

1. Housekeeping needs to be improved in the machine room, the car top and the pit area.
2. The elevator disconnect switches are not code compliant.
3. The machine brake pins should be lubricated.
4. The machine room entrance door should be labeled.
5. There is some crowning on the hoist ropes; these should be monitored for replacement.
6. A parts cabinet and oily rag bin should be provided in the machine room.
7. The battery status of the cab emergency lights should be checked and corrected if necessary.
8. The manual door closers should be adjusted at all floors.
9. The door operators and related hardware should be cleaned and lubricated.

South Elevator:

10. Housekeeping needs to be improved in the machine room, the car top and the pit area.
11. The machine brake pins should be lubricated.
12. The machine room entrance door should be labeled.
13. The door within the machine room should be labeled to prevent injury in exiting through it.
14. There is some crowning on the hoist ropes; these should be monitored for replacement.
15. A parts cabinet and oily rag bin should be provided in the machine room.
16. The battery status of the cab emergency lights should be checked and corrected if necessary.
17. The manual door closers should be adjusted at all floors.
18. The door operators and related hardware should be cleaned and lubricated.

	North Elevator	South Elevator	ACCEPTABLE STANDARDS FOR THIS EQUIPMENT
A. SPEED - UP DIRECTION (FPM)	470	458	475 – 525
B. SPEED - DOWN DIRECTION (FPM)	475	462	475 – 525
C. DOOR OPENING TIME (SEC)	2.6	2.9	2.4-2.7
D. DOOR CLOSING TIME (SEC)	3.9	4.3	3.7-4.0
E. DOOR OPEN DURATION - CAR CALL (SEC)	3.5	3.2	3.0 min.
F. DOOR OPEN DURATION - HALL CALL (SEC)	4	4.3	5.0 min.
G. DOOR OPEN DURATION - AFTER PROTECTIVE SHIELD IS RE-ESTABLISHED (SEC)	1.8	1.5	1.0 min.
H. FLOOR TO FLOOR PERFORMANCE TIME (SEC)	4.9	5.3	4.5-5.0
I. STOPPING ACCURACY (INCHES)	0.25	0.25	± ½
J. CAR DOOR CLOSING PRESSURE (LBS)	28	26	30 max.

RECORDED OPERATING PERFORMANCE

* DENOTES UNACCEPTABLE CONDITION BASED ON STANDARDS SPECIFIED.

N/E - denotes “No Evaluation” of referenced standard performed.

N/A - denotes standard is “Not Applicable” to these systems.

N/O - denotes “Not Operative” at time of evaluation.

DEFINITIONS AND MEASUREMENTS OF ITEMS LISTED IN

3. RECORDED OPERATING PERFORMANCE

- A & B. Speed** is the rate at which the measured unit travels. The speed has been measured during a complete run of the unit and was taken as the highest sustained value recorded using a hand held tachometer.
- C. Door Opening Time** is defined as the start of car doors opening until they are fully opened. The time was measured in seconds from the moment the car doors start to open until the car doors are fully open (i.e., motion stops).
- D. Door Closing Time** is defined as the start of the car doors closing until fully closed. The time was measured in seconds from the moment the car doors start to close until the car doors are fully closed (i.e., motion stops).
- E. Door Open Duration for a Car Call** is defined as the length of time the car doors remain fully open in response to a car call without anyone passing through the protective shield. This time was measured in seconds from the stop in the open motion of the car doors until the start of the closing motion of the car door.
- F. Door Open Duration for a Hall Call** is defined as the length of time the car doors remain fully open in response to a lobby call without anyone passing through the protective shield. This time was measured in seconds from the stop in the open motion of the car doors until the start of the closing motion of the car doors.
- G. Door Open Duration After Protective Shield is Re-Established** is defined as the length of time the car doors remain open after an object has passed through the protective shield until the car doors begin to close. This time was measured in seconds from the stop in the motion of the car doors until the re-start of the closing motion of the car doors.
- H. Floor to Floor Performance Time** is defined as the time required for the movement of a car between two (2) floors, including the door closing and effective door opening for passenger transfer. The time was measured in seconds from the start of door closing at one floor until the car was stopped (within stopping accuracy) at the next floor with the doors fully opened.
- I. Stopping Accuracy** is the distance between the car and hoistway sills when the car is stopped at a floor and was measured as the vertical distance (in inches) between the horizontal planes of the car and hoistway sills when the car is stopped at a floor.
- J. Car Door Closing Pressure** is the amount of force required to hold a door from closing after stalling the door, by external means, at about 1/3 of the closing distance. The door pressure was measured in pounds and was recorded upon removal of the physical block.

4. QUALITY OF RIDE

The Quality of Ride evaluated has been done in a subjective manner and has a point value of 15 assigned to each category. The elevator movement from entering the car until the final destination is made up of the following components:

- o Door Closing
- o Start of Car
- o Acceleration
- o Full Speed Riding Quality
- o Deceleration
- o Stop
- o Door Opening

Conditions noted during our evaluation include the following:

Door Closing: The movement should be smooth with no noticeable bouncing (vertically) or hesitation (horizontally). Final closing should be continuous without slamming and without undo car sway.

Start of Car: The starting should not be felt (brake lifting) or have any rollback (reverse motion).

Acceleration: After the start, the acceleration is a continuous pick up of speed without the feeling of “steps” or pauses.

Full Speed An elevator should run at full speed without major side to side or front to back movement.

Riding Quality: The ride should also be made without unnecessary noises. The evaluation of this quality can be subjective unless meters are used.

Deceleration: This quality is usually the reverse of acceleration and should be continuous without “steps” or pauses.

Stop: The ideal stop should be made electrically (not felt) and within ½” level with the landing. The brake should not be set until after the car has stopped.

Door Opening: This movement should be rapid and smooth without any undo noise. The final stop of the door opening cycle should be dynamic without bumping. If pre-opening is used, this should not start before the car is within 3" of the floor.

Elevator	Door closing	Start of Car	Acceleration	Full Speed	Deceleration	Stop	Door Opening	Overall Rating
<i>North</i>	12	13	13	14	12	12	11	87
<i>South</i>	10	12	13	14	12	12	11	84

QUALITY OF RIDE CHART

An overall rating of 94 and above is good.

An overall rating between 84 and 93 is acceptable.

An overall rating between 74 and 83 is marginal.

An overall rating below 74 is unacceptable.

We have run several theoretical traffic analyses on the two existing elevators in the State Capitol Building to determine if they handle the building population adequately or if a different scheme of elevators is required. These calculations are based on a morning up-peak condition typically found in an office building environment. We have been advised that under normal operations the elevator system is expected to handle a normal employee population of 350 people and during legislative sessions it is expected to handle a population of 1200 people.

Factors considered when calculating the correct number of elevators, their capacity and their speed for an office building are INTERVAL and HANDLING CAPACITY.

INTERVAL:

Interval is the average amount of time [expressed in seconds] between elevator departures from the main entry floor of an office building. Stated differently, it is the amount of time between the departure of one elevator and the arrival of the next elevator. It is arrived at as the result of calculating the amount of time that it takes one elevator to make a complete round trip [known as Round-Trip-Time or RTT] of the floors in the building and dividing the RTT by the number of elevators. The acceptable Interval parameter is 25 to 35 seconds at the Lobby during the up-peak traffic of the morning.

HANDLING CAPACITY:

Handling Capacity is the amount of the building population that can be moved by the elevators in a given period of time. It is expressed as a percentage over a 5-minute period and it is desirable to populate an office building in 30 to 40 minutes. Therefore, the acceptable Handling Capacity parameter is 12.5% to 16.5%.

EXISTING CONDITIONS:

The two passenger elevators in the building are separated by a significant distance and therefore operate independently of each other. This is not the most ideal arrangement of elevators. It would be a more efficient system if the two elevators were next to each other and their dispatching was tied together as a group operation. However, as they are laid out and assuming the two elevators are used equally, the average interval for each is high at 92.3 seconds but the combined handling capacity is excellent at 46.3% for the normal population. During legislative session the interval remains high at 92.3 seconds and the handling capacity is still acceptable at 13.5%.

As a matter of interest and in either case, normal or legislative, if the two elevators were a group operation, the interval would reduce to 46.1 seconds and the handling capacities would remain the same. Although the interval would still be unacceptable, it is much closer to the desired 25 to 35 second range.

RECOMMENDATION BASED SOLELY ON TRAFFIC CONSIDERATIONS:

To obtain an ideal interval and handling capacity, it would be necessary to install a three-car group of elevators. This would produce a 30.8-second interval and a 20.2% handling capacity during legislative session, the most demanding time.

Adding a three-car group of elevators will require other work besides that performed by an elevator contractor. A new hoistway will have to be built and electrical power supplies will be required, along with HVAC needs. The elevator portion of the work to install three gearless elevators is estimated to be between \$500,000 and \$600,000.

CONCLUSIONS & RECOMMENDATIONS

XV. ELEVATOR EVALUATION

EVALUATION FINDINGS

The present elevator equipment requires preventive maintenance, cleaning, readjusting, repairing and worn parts replacement to provide (safe) and reliable vertical transportation.

The existing passenger elevator cabs and entrances are in need of modernization or upgrading to address present deficiencies and to assure continued long term reliability, safety and performance. Long term planning requires some degree of modernization/upgrading be implemented within the next five years.

A preliminary upgrading budget follows in this report for consideration as a starting point in formulating plans for modernization of the passenger/service elevator systems.

Typical modernization projects of similar passenger elevators, upgraded with cab enclosures and landing entrance replacements have averaged between \$50,000 and \$75,000, depending upon the specific scope of work, aesthetics and industry escalation.

Modernization projects of this scope can run as long as six to seven months, from issuance of specifications, award of contract and completion of the work, depending on scheduling and phase of the work. Material lead time alone can run as long as three months.

The elevator machine room equipment has been upgraded circa 1990 and should provide satisfactory service for the foreseeable future, providing the required preventative maintenance continues.

Upgrading and/or Modernization:

BUDGET COST ESTIMATES

North Elevator:

• Replace elevator cab	15,000	to	20,000
• Replace landing entrances at floors 1 through 4	10,000	to	17,500

South Elevator:

• Replace elevator cab	15,000	to	20,000
• Replace landing entrances at floors 1 through 4	<u>10,000</u>	to	<u>17,500</u>

Totals:	50,000	to	75,000
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2.. EQUIPMENT PROFILE

A. GENERAL

Elevator Identification:	North	South
Loading Classification:	Passenger	Passenger
Capacity: (lbs.)	2500	3000
Floors Served:	B, 1-4	B, 1-4
Rated Speed: (fpm)	500	500

B. MACHINE ROOM

Location:	Overhead	Overhead
Type Machine:	Gearless	Gearless
Manufacturer:	Dover	Otis
Roping:	1:01	2:01
Brake:	DC	DC
Power Drive (Type):	SCR	SCR
Controller Type:	Microprocessor	Microprocessor
Controller Manufacturer:	Montgomery	Montgomery
Power Supply:	208 v	208v
Governor Type:	Centrifugal	Centrifugal
Governor Manufacturer:	Montgomery	Montgomery
Governor Rope Size:	3/8"	3/8"
Date of Last Test:	Oct-77	Oct-77
Selector Type:	Closed Loop	Closed Loop
Sequence/Type of Operation:	Selective Collective	Selective Collective
Access/Door:	OK	OK
Ventilation/Clearances:	OK	OK
Lighting/Fire Extinguisher:	OK	OK

C. HOISTWAY

Floors Served Front:	5 [B,1-4]	5 [B,1-4]
Floors Served Rear:	0	0
Floors Served Side:	0	0
Door Configuration:	2SSS	2SSS
Clear Opening:	3' – 6"	3' – 6"
Tracks/Hangers:	MAC	MAC
Safety Interlocks:	MAC	MAC
Self-Closing Devices:	Spirator	Spirator
Guide Rails Car:	15 lbs	15 lbs
Guide Rails Counterweight:	8 lbs	8 lbs
Guides (Car/CWT.):	Roller	Roller

D. PIT

Access/Ladder:	OK	OK
Car Buffer:	Oil	Oil
Counterweight Buffer:	Oil	Oil
Car Safety (Type):	Wedge	Wedge

E. CAB ENCLOSURE

Car Door Panel: (Type)	2SSS	2SSS
Clear Opening:	3' – 6"	3' – 6"
Door Protection:	Detector	Detector
Tracks/Hangers:	MAC	MAC
Power Door Operator:	MAC	MAC
Top of Car Station:	OK	OK

F. FIXTURES/SIGNALS

Car Station: (Main)	OK	OK
Car Position Indicator:	OK	OK
Floor Position Indicator:	OK	OK
(Location)	All Floors	All Floors
Car Direction Indicator:	OK	OK

G. EMERGENCY SIGNALS/OPERATIONS

Fire Service:	OK	OK
Signals/Engraving:	OK	OK
Smoke Sensors:	OK	OK
Emergency Car Lighting:	OK	OK
Emergency Car Communication:	OK	OK

H. KNOWN HISTORY

Original Equipment		
Manufacturer:	Dover	Otis
Date of Original		
Installation:	Circa 1968	Circa 1928
Date of Last Upgrading:	Circa 1990	Circa 1990
Modernization Contractor:	Montgomery	Montgomery
Present Service Company:	Thyssen/Dover	Thyssen/Dover

3.Modernization/Upgrading Outline

Elevator I.D. North and South Elevators:

The following itemized breakdown of elevator system components indicates the recommended long term action under an improvement plan for 5-10 years.

Coding: N -New (upgrade)
 NR -New (direct replacement)
 R -Retain (preventive maintenance service)
 M -Modify (refurbish to suit)
 A -Alternative (upgrade)
 N/A -Not Applicable
 N/E -No Evaluation Made

	RECOMMEND		COMMENTS
	North	South	
A. Machine Room/Secondary/Overhead:			
Hoisting Machine	R	R	S: Refurbish
Brake	R	R	
Deflector Sheave	R	R	
SCR Power Drive	R	R	
Motion Control	R	R	
Signal Control	R	R	
Floor Selector	R	R	
Overspeed Governor	R	R	
Power Supply	R	R	N: Replace disconnects
Emergency Power	N/A	N/A	
Fire Controls	R	R	
Sequence of Operation	R	R	
Illumination	R	R	
Access	R	R	
Ventilation (H.V.A.C.)	R	R	
Space Conditions (General)	R	R	

	RECOMMEND		COMMENTS
	North	South	
B. Hoistway and Pit:			
Guide Rails – Car & Cntrwt	R	R	
Hoisting Cables	R	R	
Governor Cables	R	R	
Counterweight (s)	R	R	
Car Guides	R	R	
Counterweight Guides	R	R	
Slow Downs/Limits	R	R	
Landing/Leveling Devices	R	R	
Encoding Devices	R	R	
Auxiliary Safety Switches	R	R	
Buffers/Car/Counterweight	R	R	
Governor Cable Tension Sheave	R	R	
Auxiliary Sheaves	R	R	
Conduit /Wiring	R	R	
Electrical Traveling Cables	R	R	
Overhead Clearance	R	R	
Shaft Clearance	R	R	
Shaft Condition (Windows, Ledges, etc.)	R	R	
Pit Switch	R	R	
Pit Access	R	R	
Pit Depth	R	R	
Lighting	R	R	

	RECOMMEND		COMMENTS
	North	South	
C. Hoistway Door Equipment:			
Entrance Frames	N	N	N & S: Replace stationary frame design
Entrance Sills	R	R	
Entrance Doors	R	R	
Entrance Top Track	R	R	
Entrance Interlocks	R	R	
Entrance Closers	R	R	

	RECOMMEND		COMMENTS
	North	South	
D. Car Equipment:			
Door Operator	R	R	
Clutch Engaging Device	R	R	
Safe-Edge	R	R	
Photo Eyes	N/A	N/A	
Door Panels	M	M	N& S: Replace
Door Panel Top Track	R	R	
Door Panel Bottom Sill	R	R	
Car Enclosure	M	M	N& S: Replace
Car Ventilation	M	M	N& S: Replace
Car Lighting (Interior)	M	M	N& S: Replace
Car Lighting (Top and Bottom)	R	R	
Car Top Inspection Station	R	R	
Car Frame	R	R	
Car Platform	R	R	
Car Safety	R	R	

	RECOMMEND		COMMENTS
	North	South	
E. Operating Signal Fixtures:			
Car Operating Station	R	R	
Car Position Indicator	R	R	
Car Riding Lantern	N/A	N/A	
Floor Position Indicator	R	R	
Corridor Push Buttons	R	R	
Corridor Direction Lanterns	R	R	
Emergency Lighting	N	N	
Communication	N	N	
Lobby Station	N/A	N/A	
Auxiliary Lobby Equipment	N/A	N/A	
Handicap Provisions	R	R	

RECOMMENDATION SUMMARY
